

Application No. 09/800,977

Amendment After Final Rejection dated May 10, 2005

Reply to Final Rejection of November 10, 2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)
15. (Cancelled)
16. (Cancelled)
17. (Cancelled)
18. (Cancelled)

19. (Previously Amended) A method for providing a reference library of representative sets of correlated values for use in monitoring a system using an empirical model, comprising the steps of:

receiving a variable signal measuring a parameter of said system during operation of said system in a known mode;

decomposing said variable signal into component signals;

sampling said component signals periodically to provide successive sets of correlated values; and

selecting some of said sets of correlated values for inclusion in said reference library and including a particular set of correlated values if said particular set includes a minimum or a maximum value of one of the correlated values, as compared to all like values in all the sets of correlated values.

20. (Original) A method according to claim 19, wherein said decomposing step comprises transforming said variable signal with a discrete wavelet transformation to produce component signals comprising successive wavelet coefficients.

21. (Original) A method according to claim 19, wherein said decomposing step comprises filtering said variable signal with a plurality of frequency bandpass filters to produce component signals for each band of frequencies.

22. (Original) A method according to claim 19, further comprising storing in said reference library a classification with a selected set of correlated values, associated with a known state of the variable signal.

- 23. (Cancelled)
- 24. (Cancelled)
- 25. (Cancelled)
- 26. (Cancelled)
- 27. (Cancelled)
- 28. (Cancelled)

29. (Previously Amended) A method of extracting information from a complex signal, said method comprising the steps of:

- a) receiving a complex signal, said complex signal carrying data therein;
- b) periodically decomposing said received complex signal into a plurality of components;
- c) comparing for similarity said components against a plurality of snapshots in a storage set of historical components, by rendering a value for each pair of corresponding components as a function of the difference between the pair and as a function of the expected range of variation for such component;
- d) averaging comparison results from comparing said components against said snapshots, said average comparison results providing an indication of information in said complex signal.

30. (Original) A method of extracting information as in claim 29, wherein the step (b) of periodically decomposing said received complex signal comprises extracting wavelet detail levels from said complex signal.

31. (Original) A method of extracting information as in claim 29, wherein the comparison step (c) comprises applying a bounded area ratio test to each of said plurality of components, each component being compared against a corresponding component in each of the plurality of snapshots.

32. (Currently Amended) A method of extracting information as in claim ~~[[31]]~~-29, said method further comprising the steps of:

- e) identifying a matching historical signature vector among said plurality of snapshots responsive to said average comparison results; and
- f) outputting a digital result corresponding to said identified matching historical signature vector.

33. (Currently Amended) A method of extracting information as in claim ~~[[31]]~~ 29, said complex signal being generated responsive to a system being monitored, said method further comprising the steps of:

- e) generating an expected signal result from averaged said comparison results;
- f) generating a residual from said expected signal result and said decomposed received complex signal; and
- g) testing said residual to determine whether said expected signal result is different from said received complex signal.

34. (Original) A method of extracting information as in claim 33 further comprising the step of:

- h) diagnosing a state of said monitored system responsive to said determination of step (g).

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- 35. (Cancelled)
- 36. (Cancelled)
- 37. (Cancelled)
- 38. (Cancelled)
- 39. (Cancelled)
- 40. (Cancelled)
- 41. (Cancelled)
- 42. (Cancelled)
- 43. (Cancelled)
- 44. (Cancelled)
- 45. (Cancelled)
- 46. (Cancelled)